Proceedings of the British Pharmacological Society at http://www.pA2online.org/abstracts/Vol16Issue1abst162P.pdf

Is TRPV-1 receptor the missing link in treatment of depression?

L. Nabi[1], J. Keeble[2]. [1]Psychological Medicine, Kings College London, London, UNITED KINGDOM, [2]Institute of Pharmaceutical Scienes, Kings College London, London, UNITED KINGDOM.

Introduction

Transient receptor vanilloid type 1 (TRPV1) contributes to depressive behaviour and manipulation of receptor (genetically or pharmacologically) produces antidepressant- like effect in rodents (Abdelhamid *et al.,* 2014). Although many classes of antidepressants are available, unfortunately, 30% of the patients do not respond to conventional therapies (Socala and Wlaz,. 2016).To improve pharmacological treatment, we need to understand the role of TRPV1 receptor in depression and anxiety. The study aim was to analyse the role of TRPV1 receptor in depressive-like behaviour and anxiety, using the burrowing test.

Method

Anxiety and depressive- like behaviour was evaluated using burrowing method. The protocol is based on Deacon (2006) where the burrowing activity of adult male and female, adult and aged, TRPV1 knockout (KO) and C57BL/6 wildtype (WT) mice was measured after overnight and 2-hour tests over three consecutive days. Burrowing was measured as the weight of gravel removed from a plastic tube. Data was analysed using independent T-test, two-way ANOVA and applicable post-hoc tests.

Results

TRPV1 KO male burrowed significantly more than WT mice in the overnight test (24 %; $p \leq 0.01$) and days 1 and 2 (19 % and 24 %; $p \leq 0.05$) but not day 3. Additionally over time, TRPV1 KO mice burrowed 14% less on day3 when compared with day1. There was no difference in burrowing between adult female TRPV1 KO and WT mice in either the overnight and the three day tests (overnight and days 1, 2 and 3 $p > 0.05$). However over time, adult WT mice burrowed significantly more (34%) on day3 compared to day1 and there was also a difference between male and female TRPV1 mice. Furthermore, there was no difference in burrowing performance between aged TRPV1 KO and WT mice nor between adult and aged TRPV1 KO mice (in overnight and days 1, 2 and 3 tests; $p > 0.05$).

Conclusion

Male TRPV1 mice burrow significantly more than their WT counter parts which may reflect inherited compensatory mechanisms. There was no difference in burrowing between TRPV1 KO and WT females which could be due to hormonal effect. We also showed that there is a gender and over time variability in burrowing between TRPV1 KO males and females and that TRPV1 may have a role in depressive-like behaviour and anxiety.

References

Abdelhamid RE *et al.* (2014). Pharmacological Research **79**: 21- 27.

Deacon RMJ (2006). Nat Protoc **1:** 118-121.

Socala and Wlaz. (2016). Behavioral Brain Res. **303:** 19-25